

# **Regional Risk Analysis: A Coordinated Effort**

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# National Capital Region (NCR) Overview

- The NCR was created pursuant to the National Capital Planning Act of 1952 (Title 40, U.S.C., Sec. 71). It is the 4th largest U.S. metropolitan area and encompasses:
  - 12 local jurisdictions in Maryland and Virginia, and the District of Columbia
  - All 3 branches of federal government and 270+ federal agencies
  - 5 million residents and more than 20 million tourists per year
  - \$288B Gross Regional Product
  - The World Bank, Organization of American States, and other international non-governmental organizations
  - More than 2,100 non-profit organizations
  - More than 40 colleges and universities
  - 2nd largest rail transit system and the 5th largest bus network in the United States
  - 2 major airports
- In the NCR, regional leadership includes the Senior Policy Group (Homeland Security Advisors and Chief Emergency Managers of the District of Columbia, Maryland, and Virginia and the Director of the Office of National Capital Region Coordination) and the Chief Administrative Officers Committee (local officials). Other regional organizations exist with memberships of federal, state, and local officials, such as the NCR Emergency Preparedness Council.



# Past NCR Risk Projects

*Examples of risk assessments and analyses conducted in the NCR include:*

- Critical Infrastructure Protection in the National Capital Region – Risk-Based Foundations for Resilience and Sustainability (2005)
  - Also known as the “Strengths and Weaknesses Study”
  - Assessed risk management efforts in select sectors to aid in the development of a strategic framework for regional critical infrastructure protection
- NCR Hazard Identification and Risk Assessment (HIRA) (2007)
  - Analyzed risks to the NCR and their impact on regional continuity
- Washington, DC Risk Baseline (2008)
  - Identified Washington, DC-area risks, assessing threat, vulnerability, and consequence based on available data and models
  - Although fully separate efforts, Risk Baseline results were consistent with results of the 2008 NCR SHIELD initiative

# 2008 NCR SHIELD Initiative

National Capital Region  
Strategic Hazards Identification and Evaluation for  
Leadership Decisions

# 2008 NCR SHIELD Overview

- Developed by the Office of National Capital Region Coordination (NCRC) within the Federal Emergency Management Agency
  - In partnership with the Office of Risk Management and Analysis (RMA) within the U.S. Department of Homeland Security's National Protection and Programs Directorate
  - With input from federal, state, local, and private sector partners in the National Capital Region (NCR)
- Designed to support risk-informed decision making
  - Regional risk assessment (terrorism and natural hazards)
  - Strategic approach to risk management

# Foundational Questions

*Through discussions with NCR leadership, determined decision-making requirements:*

- Risk Assessment:
  - Which scenarios pose the greatest risks to the NCR?
- Capabilities:
  - What capabilities apply across the greatest number of high risk scenarios?
  - Which capabilities have the greatest impact to high risk scenarios?
  - What solutions or capabilities need not be replicated in every jurisdiction, but can be shared effectively?
- Risk Management:
  - How should the NCR prioritize its limited resources to most effectively reduce its greatest risks?

# 2008 NCR SHIELD Outputs

*NCR SHIELD aided executive decision makers in more efficiently evaluating risks, as well as options to mitigate those risks and alternative strategies to manage risk*

- Risk Assessment:
  - Scenario-based assessment of terrorism and natural hazard risks
  - Prioritized risks as they apply to assets in select critical infrastructure and key resource (CIKR) sectors
- Strategic Approach to Risk Management:
  - Produced broad, strategic-level risk management options for application across CIKR
    - Investment themes
    - Focus areas

# 2008 Strategic Risk Management Approach

## Support of NCR Leadership Proposed Investment Strategies

### NCR SHIELD Investment Themes and Focus Areas

- **Reduce threat through information sharing**
  - o Information/intelligence gathering
  - o Local law enforcement and intelligence coordination
  - o Improve threat identification, detection, and validation
  - o Policy review/development, exercise
- **Identify and address vulnerabilities through critical infrastructure protection**
  - o Assess and improve countermeasures for the Transportation Sector, and evaluate and further develop standardized policies, training, exercises
  - o Conduct water dependency assessment of assets in highest risk sectors and those with high dependency on potable water
  - o Engineering systems analysis of infrastructure interdependencies, cascading effects, single-point vulnerabilities, nodes of critical failure
- **Enhance response capabilities for improved consequence management (regionally synchronize preparedness and response planning and capabilities)**
  - o Medical surge response capabilities
  - o Large-scale response planning, special-needs assessments, coordination, and public outreach/mass notification (evacuation and reentry)
  - o Specialized response capabilities (defense, safety and recovery)
  - o Hazard mitigation planning
- **Enhance communications to improve effectiveness of all strategic investments**
  - o Interoperability
  - o Policy and protocol
  - o Equipment, training, exercise (ETOP)

### NCR Leadership Proposed Investment Strategies

- **Regional Defense Network / Information Sharing**
- **Critical Infrastructure Protection**
- **Mass Casualty / Hospital Surge**
- **Evacuation / Shelter / Decontamination**
- **NCR Exercise and Training Oversight Panel (ETOP) / Corrective Action Reports**
- **Regional Information / Messaging to Public**

# Value of 2008 NCR SHIELD Initiative

- Maintained a strategic focus to support leadership decision-making processes
  - Provided leadership with information to feed high-level decisions
  - Allowed subject-matter experts to devise specific projects
- Produced broad investment themes to assist in investment decisions and project development
- Contributed to development of Fiscal Year 2009 regional grants guidance

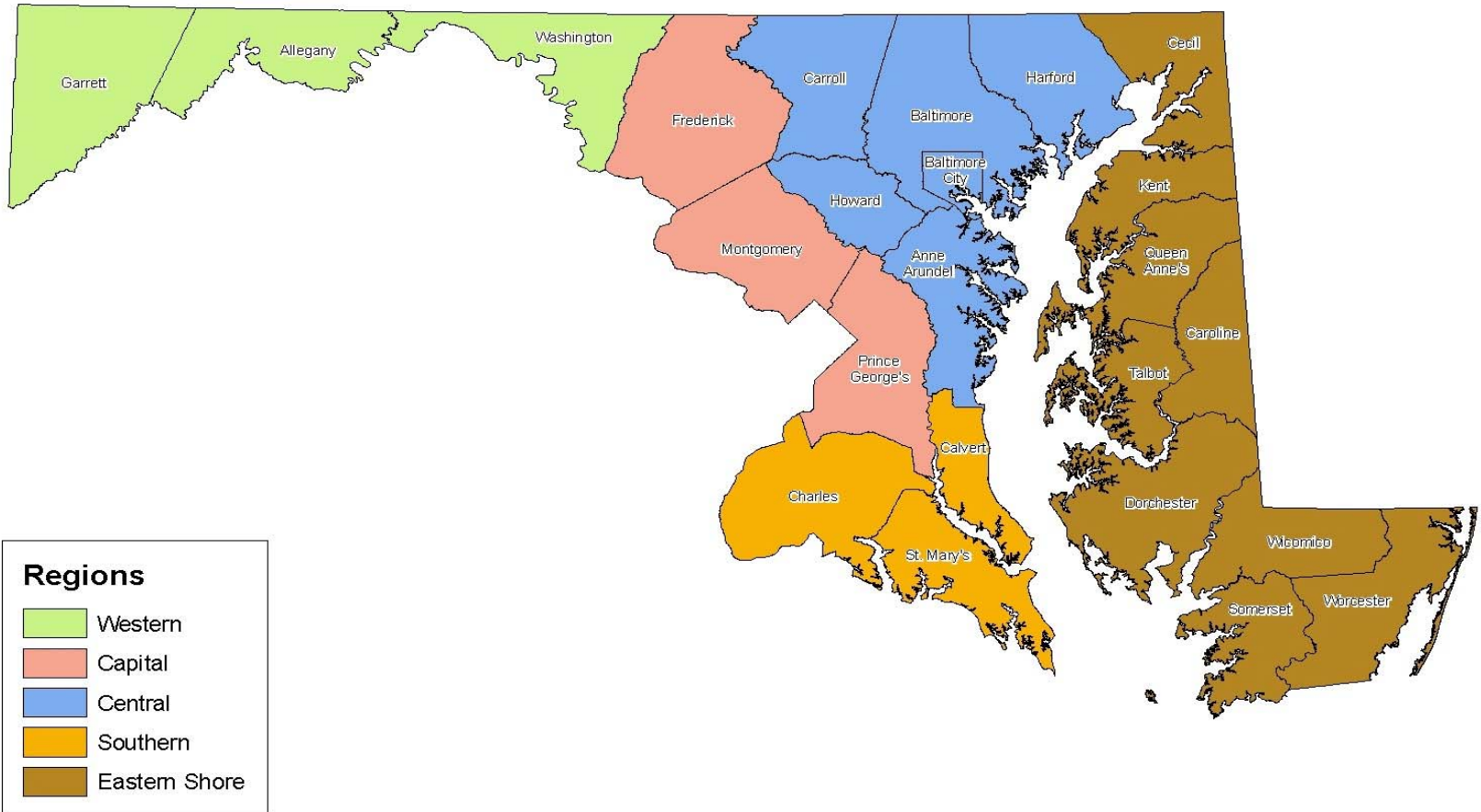
# A State Perspective on Risk

Maryland Emergency Management Agency

# A State Perspective on Assessing and Managing Multi-Jurisdictional Regional Risk

- The State Homeland Security Advisor (“Chief Risk Officer”) and the Director of the Maryland Emergency Management Agency share responsibility for ensuring the safety of all state residents:
  - Developing strategies to manage homeland security risk
  - Allocating resources, including grant dollars, to reduce risk throughout the State
  - Allocating scarce resources in a manner that achieves the highest return on investment
- To assess and mitigate risk to the entire State, these decision makers must evaluate:
  - Risk to an individual jurisdiction
  - Collective risk across individual jurisdictions within the State (Intra-State Regional Risk)
  - Risk derived from outside the State (Multi-Jurisdictional Regional Risk)

# State of Maryland



# The Importance of Understanding Multi-Jurisdictional Regional Risk

- Maryland shares borders with 5 states (District of Columbia, Virginia, West Virginia, Pennsylvania, and Delaware) and has 5 intra-state regions with very different risk profiles
- Highest multi-jurisdictional risk to the State comes from the NCR (predominately due to the presence of the federal government)
  - Threats to a jurisdiction do not stop at the border; need to ensure the safety of residents who live and work in different jurisdictions
  - Multi-jurisdictional infrastructure (e.g., power, water, and transportation systems): What happens in one jurisdiction easily affects another jurisdiction or the Region as a whole
  - Need to ensure “Regional Continuity”: Cascading effects of a failure within one infrastructure can dramatically affect other critical infrastructure in the Region (e.g., impact of power loss on hospitals)
  - Need for coordination of regional planning / preparedness and response capability building (e.g., Inauguration planning)
  - Provides opportunities for regional resource sharing

# How the Region Used 2008 NCR SHIELD

1. Used to develop Urban Areas Security Initiative (UASI) grant application to the U.S. Department of Homeland Security
  - Risk-Based Application = Increased Effectiveness Score  
= more \$\$\$
2. Assisted with guiding a new strategic “process” for developing regional projects to mitigate risk and make informed funding decisions
3. Will assist with guiding strategic investment “themes” for future grant cycles
4. Will guide revision of the NCR Strategic Plan

# New “Process” for Regional Decision Making

## Parties Involved:

### 1. Senior Policy Group (SPG) / Chief Administrative Officers (CAOs):

- High-level decision makers that must look at the big homeland security picture and connect the dots between disciplines and sectors to ensure safety of all residents
- Make funding decisions and allocate limited grant dollars in a manner that reduces risk and maximizes the return on investment

### 2. Regional Working Groups and Committees:

- Practitioners, first responders, subject-matter experts, and those who develop and implement projects to mitigate risk within a sector or discipline
- Up to 21 groups (including law enforcement, fire, EMS, public health, hospitals, transportation, hazmat, critical infrastructure protection, emergency management, exercises and training, interoperability, human services, public affairs, etc.)

# The BEFORE “Process”

## Bottoms-Up Approach:

- Individual working groups and committees developed projects and submitted them to the SPG / CAOs for funding
- The amount of money requested was always more than the amount of money available (created competition for funds)
- Projects developed in sector silos without a high-level strategic view of the entire homeland security picture
- SPG / CAOs did not have input into the type of projects that were developed

# The Result

- Money was spread too thin across too many investment areas
- Difficult to build capabilities and accomplish goals
- Difficult to see a difference and determine if the Region was any “safer”

# The AFTER “Process”

## Meet-in-the-Middle Approach:

- SPG / CAOs used the regional risk assessment results to set strategic high-level priority areas of focus for investments within a given grant year
  - Sector and Scenario Focus to Investments
- Regional working groups and committees must meet and coordinate the development of projects to address the strategic themes of the grant year
  - Still allows the practitioners to use their subject-matter expertise to address risk management from an operational and tactical perspective

# Priority Investment Themes for Grant Years

FY08:

- Health and Medical Preparedness and Response; Regional Defense Network (CCTV, License Plate Readers, Radiation Detection); Evacuation and Special Needs Planning

FY09:

- Critical Infrastructure Protection (Transportation, Water, and Back-Up Power); Information Sharing and Integration

FY10 and beyond:

- Other areas identified through regional risk analyses that cannot be addressed in a single grant year

# Strengths of Regional Risk Management

- Develop regional solutions to problems that save money and leverage the capabilities, assets, and resources of other jurisdictions
- Strategic placement of regional caches of equipment and regional response teams (e.g., ambulance buses, mass casualty medical supplies)
- Coordinated planning, training, and exercises across jurisdictions and disciplines (e.g., Inauguration transportation plan, EMS / Hospital plans)
- Enhanced information sharing by linking individual jurisdictional systems (e.g., law enforcement information sharing systems; hospital bed status systems)
- Development of Memorandums of Understanding (MOUs) between disciplines to share personnel and equipment (e.g., hospitals, law enforcement, public health, fire / EMS, etc.)

# Weaknesses of Regional Risk Management

- Regional risk assessments may not identify a priority risk in a single jurisdiction
  - Leaves jurisdictions at risk to jurisdiction-specific threats
  - All emergencies start locally (e.g., local Measles outbreak)
- The Region is only as strong as its weakest link
  - Sometimes you need to fix the small gaps / holes within a single jurisdiction to ensure the Region has a capability
- Sometimes a regional capability cannot be developed until it is first developed at the jurisdictional level
  - Example: Regional Evacuation Planning and Public Health Planning

# Next Steps:

## What do we need to build on?

### *Need for Risk Management Options*

#### Challenges for the Region:

- SOMETIMES the jurisdictional boundaries matter in how you can best mitigate risk; a one-size approach to risk management does NOT always fit all jurisdictions
- The jurisdictions in the NCR may have the same type of risk, but due to differences in size, resources, governance, legal authority, and operational structure, the approach to mitigating risk has to be done differently by jurisdiction
- Senior Leadership needs the ability to assess the cost-benefit of multiple risk mitigation options; practitioners may be unaware of alternatives or may not have time to research alternatives and other best practices

# 2009 Risk Initiative

The Pennsylvania State University  
in support of the  
Office of National Capital Region Coordination

**KNOWING IS HALF THE BATTLE**

**LET EXPERTS BE EXPERTS**

**THE STORY IS WHAT MATTERS**

**1. WHAT CAN HAPPEN?**

**Risk  
Assessment**

**2. HOW LIKELY IS IT?**

**3. HOW MUCH WILL IT HURT?**

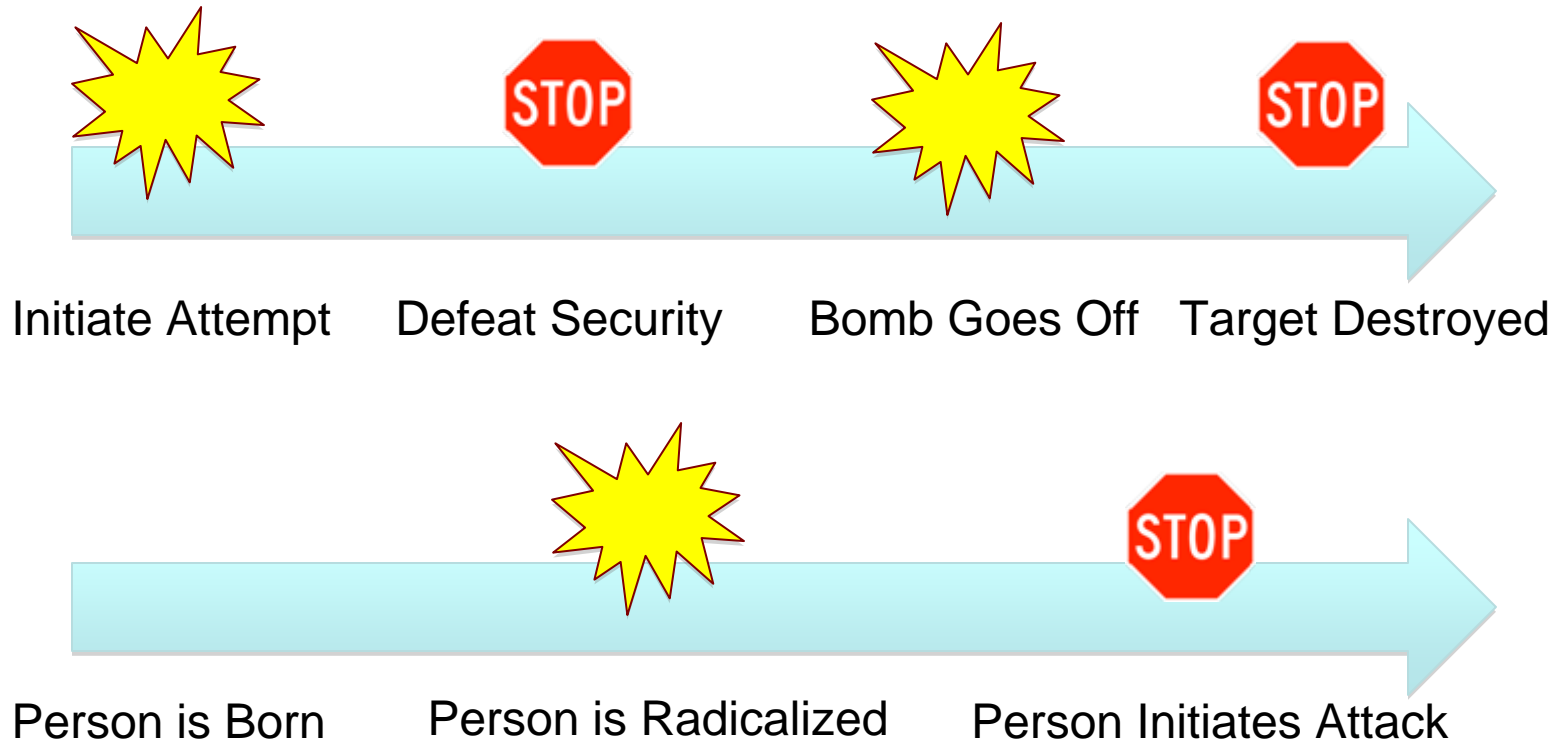
**4. WHAT CAN BE DONE?**

**Risk  
Management**

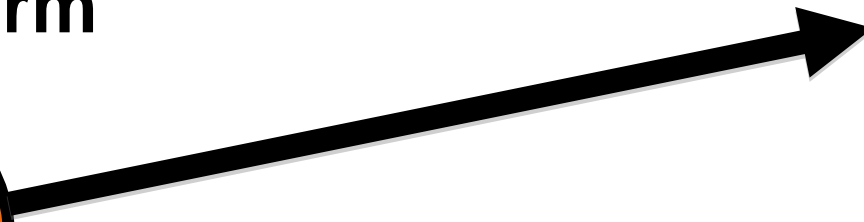
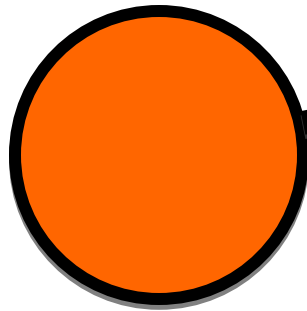
**5. WHAT ARE MY OPTIONS AND B/C OF EACH?**

**6. WHAT IS THE IMPACT ON FUTURE OPTIONS?**

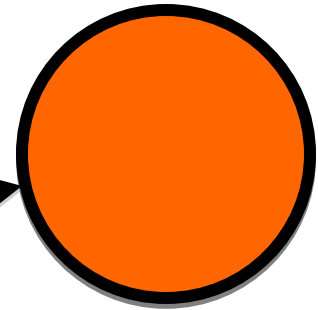
$$\text{Risk} = \Pr(s)V(s) = \Pr(e)\Pr(o|e)V(e,o)$$



**Winter Storm**

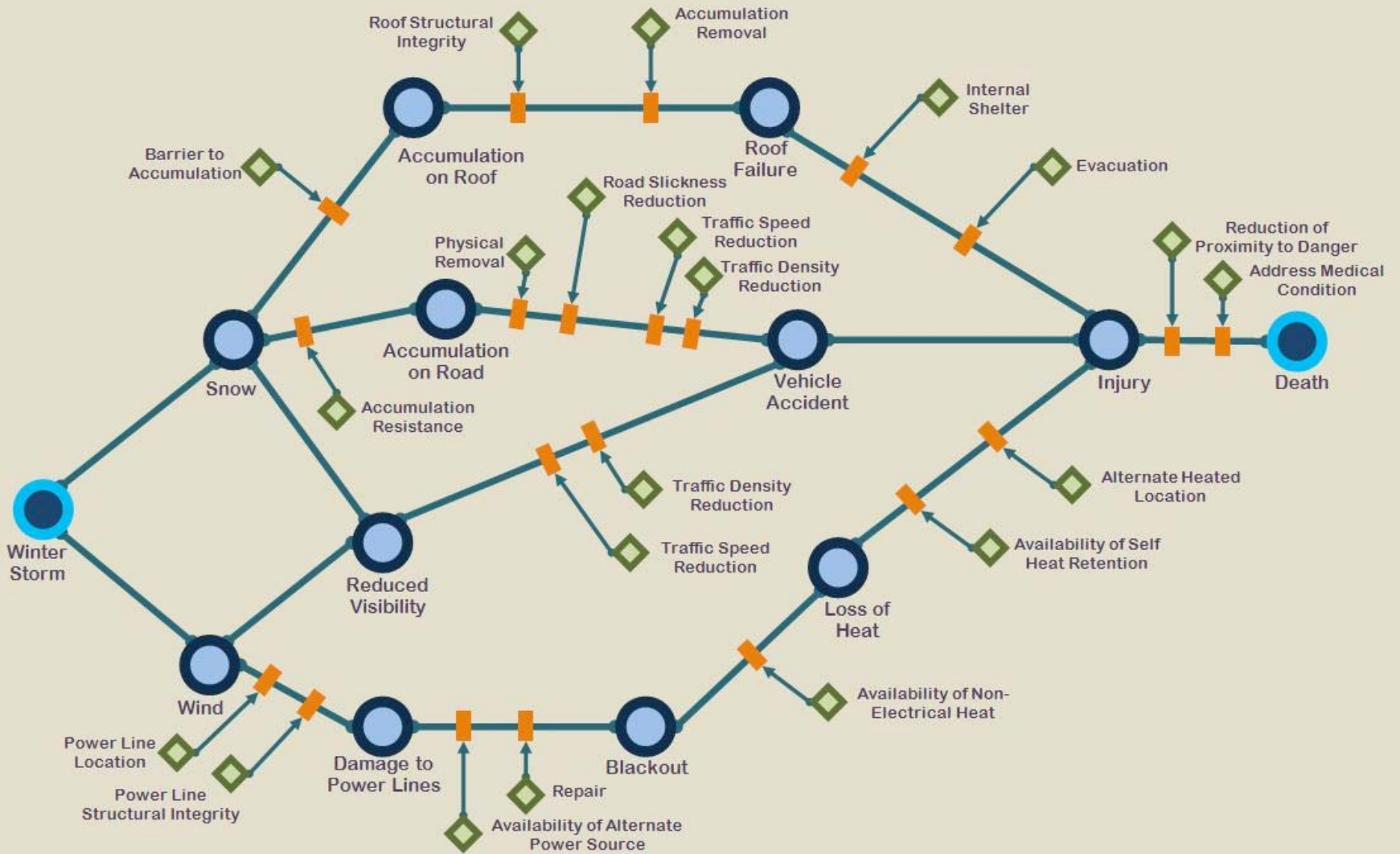


**Disruption**



**Ability to clear roads**

- ➔ **Improve ability to clear roads**
- ➔ **Snow plows**
- ➔ **Dedicated snow dumps**





## Baseline Risk Information (BLRI)

- Hazard information
- Factors that drive risk
- Countermeasures
- Case studies
- Reference material

## Will Provide the Questions to Ask

- To describe risks
- To estimate benefits and costs of mitigation options
- To monitor progress

**FACILITATES BUILDING RISK KNOWLEDGE**

$$y = f(x)$$



+



=



**BLRI**

**Expertise**

**Clarity**

# A Problem



# Or Worse...



# LET EXPERTS BE EXPERTS...

# ... BUT SUPPORT THEM ALONG THE WAY



## Stakeholder-Engaged Risk and Vulnerability (SERV) Analysis

A Five-Step Approach to Regional All-Hazards Risk Management

- 1 IDENTIFY.** This step identifies a wide variety of investment options aimed at reducing regional all-hazards risk. This elicitation of options engages those stakeholders intimately familiar with the needs, concerns, weaknesses, and strengths of the region's prevention, protection, response and recovery capabilities.
- 2 DISCUSS.** This step asks how each option reduces risk by discussing the **pros and cons** of each in terms of their ability to **reduce risk**, the **benefits and costs**, **affordability** and **impact on future decisions**. In particular, for each option:
  - a. Describe which scenarios will be impacted and explain how. For example, does the option address the risks attributed to just one type of event (e.g., explosives) or does it have an all-hazards focus?
  - b. Describe how regional capabilities will be improved and explain how. For example, does the option improve existing capabilities or does it add a new capability?
  - c. How much better off would the region be with the option than it is now, all things considered (explain why)?
  - d. Consider the life-cycle costs of each option and any potential degradation over time. For example, does the option require continuous maintenance or does it present an improved form of defense that will erode over time?
  - e. On balance, do the benefits of the option meet or exceed the costs?
  - f. Will choosing this option limit our ability to do other things in the future?
- 3 CROSS-CHECK.** Compile a list of all threats and capabilities considered and cross-check each against the proposed options to identify collateral benefits or detriments. For example, if Option A addresses "explosive attacks" and Option B addresses "evacuation capabilities," this step asks whether Option A does anything to reduce the improve evacuation and whether Option B does anything to reduce the risks of explosive attacks.
- 4 EVALUATE.** This step evaluates each investment proposal on the basis of three criteria and provides reasoned narratives explaining the findings:
  - a. **Risk Reduction:** Does the proposal buy down risk enough?
  - b. **Benefit/Cost:** Does the risk reduction result in a favorable return on investment?
  - c. **Affordability:** Is the proposal affordable?
- 5 MONITOR.** This final step identifies indicators that will tell whether the investment is actually performing as intended in terms of benefits, risk reduction, and affordability.

# Provides the Information Needed to Help Tell the Story of Risk

- Outlines information (answers) needed to justify investments
- Allows users to explore areas of uncertainty
- Provides analytic frameworks for decision making
- Facilitates generation of risk knowledge

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# For More Information . . .

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The regional risk analysis approach used in the NCR, including information on the 2008 NCR SHIELD risk assessment methodology developed by RMA, is described in an article available on George Mason's website at:

[http://cip.gmu.edu/research/Regional\\_Risk\\_Analysis.php](http://cip.gmu.edu/research/Regional_Risk_Analysis.php)

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for 2008 NCR SHIELD methodological information